

Ultra-compact industrial enhanced-safety radio remote control

UR Series



Typical applications :

- ◆ **Industrial lifting**
 - Monorails, Hoists, jib cranes
- ◆ **Industrial equipment**
 - Handling systems
 - Transfer cranes
 - Pallet trucks
 - Turning machines
 - Compactors
 - Dynamic storage
 - Ovens
- ◆ **Farm equipment**
 - Forest tree winches
 - Silos
- ◆ **Industrial vehicles**
 - Bulk product transport
 - Animal food transport
 - Sanitation
 - Aircraft pushers
 - Winches
 - Skips
- ◆ **Construction equipment**
 - Freight elevators
 - Hoppers



1- Description

CONTENTS

■ A radio remote control provides numerous advantages :

- Large freedom of movement
- Easy to use
- Precise, quality manoeuvres
- Visibility
- Productivity

■ With the UR radio remote controls, JAY Electronique provides solutions to the broad range of enhanced-safety industrial applications implementing button controls. By its adaptability, Jay Electronique's UR system integrates a number of features in terms of :

- Number of function buttons
- Type of function buttons
- Position of function buttons
- Number of output relays
- Programming of relay / button assignments

■ Special attention has been given to ensure operator's comfort through the following features :

- Ergonomic transmitters enabling one-hand control
- Control button accessibility
- Button touch sensitivity
- Identification of functions controlled
- Light-weight, ultra-compact transmitter
- Transmitter endurance, and fast battery reload
- Adaptability to all radio configurations of the environment by possibility for changing frequency by a trained operator
- Mechanical protection of function buttons to avoid any unintentional action
- Holster or carrying strap for the transmitter (accessories)

■ The receiver is also very easy to install :

- Compact receiver
- Spring-type connection terminals

■ To further enhance safety when using this equipment, technical solutions and innovative options are also proposed :

- Access is enabled by electronic key to an authorised operator only
- Infrared start-up validation (option) to limit start-up in a given area and ensure identification of equipment started up
- Industrial support charger for the transmitter (accessory)

■ Easy maintenance :

- Customization entirely stored in electronic key
- Diagnostic aid indicator lights

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● Compliance with European directives:

- Machinery
Cat.3 safety stop as defined by EN954-1
- Hertzian equipment and telecommunication terminals (low voltage, EM compatibility, radiofrequency spectrum)
ART conformity certificate

● Compliance with applicative standards :

- EN13557 (lifting machines with suspended load)



E730 G - 0907

2- Product features

2.1 Transmitter URE

The transmitter is formed by a hand-held unit having 2 or 4 function buttons, a "On/Horn" button and an emergency stop palm-switch. The unit's highly adaptable design allows for installation, in each location, of 5 different types of function buttons as described below :

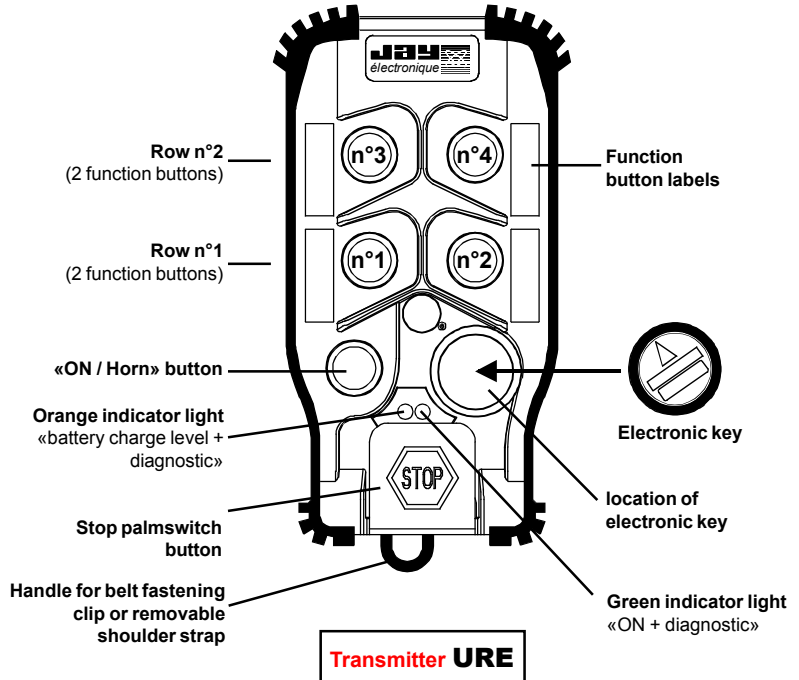
- One-step pushbutton (single speed)
- Two-step pushbutton (double speed)
- Rotary switch with 2 fixed positions
- Rotary switch with 3 fixed positions
- Rotary switch with 3 positions with auto. return

Two parameters can be easily adapted to the environment by a trained operator :

- Operating radio frequency
- Duration of temporization for «dead man» function (Automatic shutdown of remote control in case of prolonged non use)

These operations are performed by procedures implementing buttons n°1, n°2, the emergency stop palm-switch and the «On/Horn» button, with no need to open the transmitter or receiver. The change of parameter can be however locked.

The electronic key contains all the parameters of the controlled receiver, it is possible to use an auxiliary transmitter only with the electronic key and a validation procedure.



2.2 URE transmitter function button labels

The various button functions are identified by means of adhesive labels placed in the recesses provided in the transmitter unit housing at each button location.

The labels are supplied in the form of sheets with the various labels you will need for your application. Simply choose the labels corresponding to your configuration.

Reference : *
Kit of 6 colored labels, «movements», for two-step pushbuttons (double speed)

Reference : *
Kit of 90 black/white labels, «movements, special functions and customization» for pushbuttons and switches

Reference : *
Kit of 48 white blank labels, «customization» + 48 transparent protecting labels.

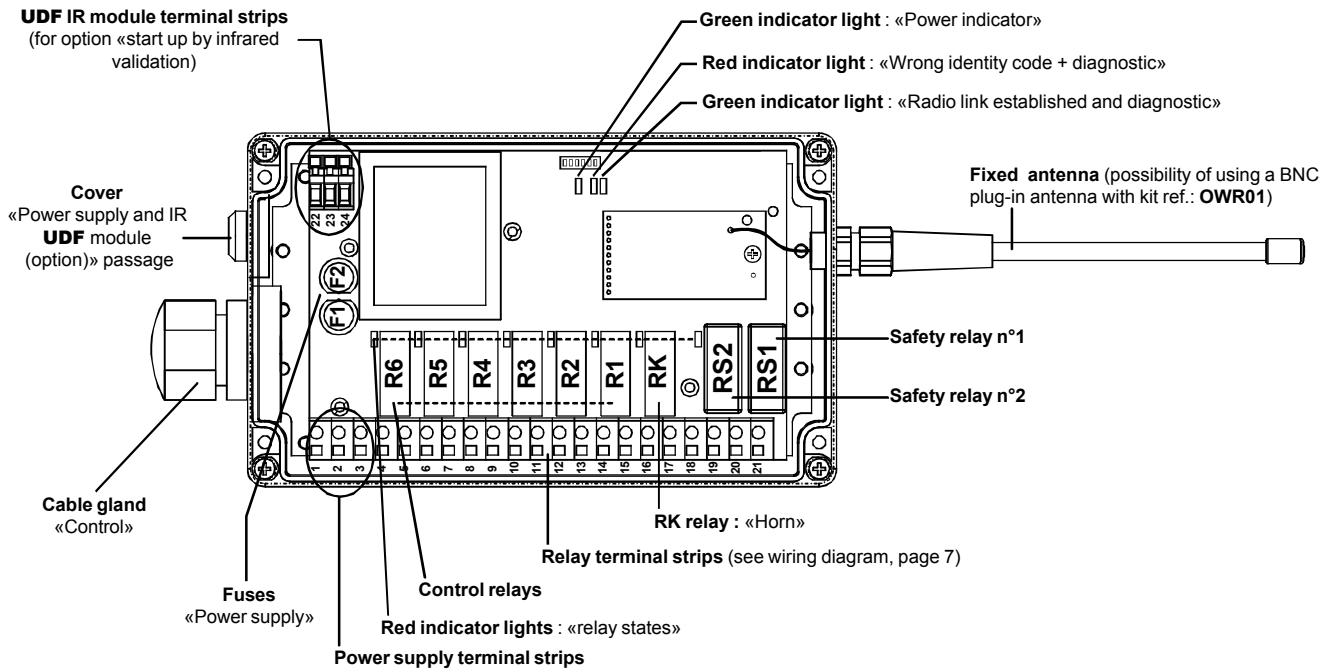
The image shows three reference kits and a large grid of labels. The first kit contains 6 colored labels: black, white, brown, green, blue, and yellow. The second kit contains 90 black/white labels with various symbols and text for movements and special functions. The third kit contains 48 white blank labels and 48 transparent protecting labels. The grid of labels includes various symbols such as directional arrows, numbers, and text labels like 'STOP', 'ON', 'OFF', 'GATE', 'FORWARD', 'LEFT', 'RIGHT', 'EAST', 'WEST', 'UP', 'DOWN', 'LEFT TRANSLATION', 'RIGHT TRANSLATION', 'UP + RIGHT TRANSLATION', 'DOWN + LEFT TRANSLATION', '1', '2', '3', '4', '5', '6', '7', '8', '9', and '0'.

* = Label sheets provided as standard supply with URE transmitter

2.3 Receiver URR

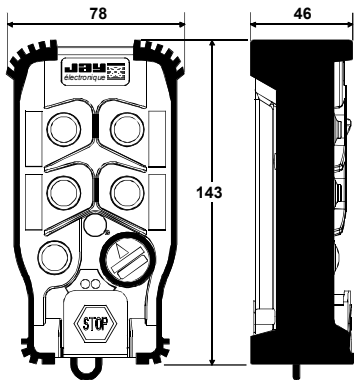
The receiver is formed by a basic PCB comprising 6 control relays. The basic board systematically comprises :

- 1 «Horn» relay (active when the transmitter «On/Horn» button is pressed, not auto-maintained)
- 2 safety relays (active when the transmitter «On/Horn» button is pressed, auto-maintained until passive or active stop)

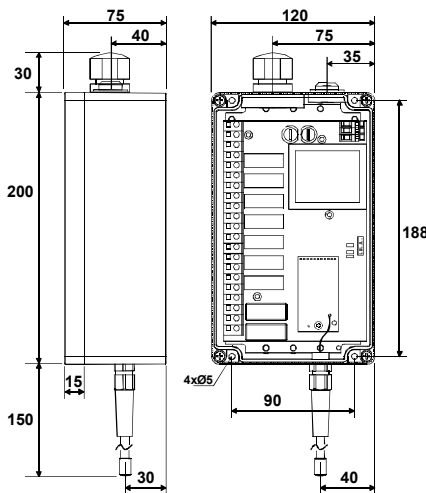


3- Dimensions

Transmitter URE

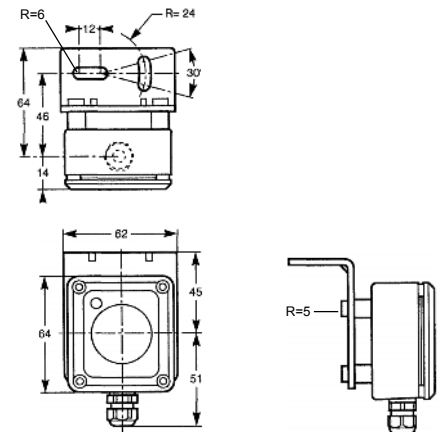


Receiver URR

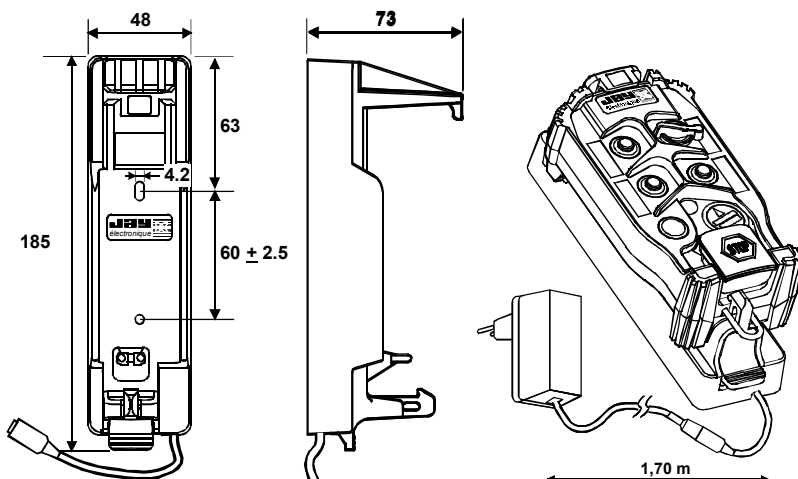


IR module UDF

(for option «start up by infrared validation», see description in following page)

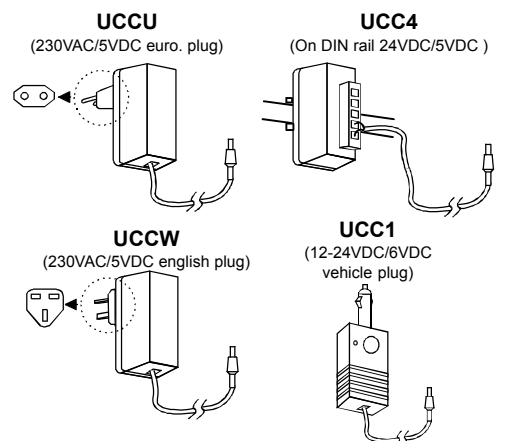


Industrial support charger URci-B



Power supply adapter UCC•

(Charge voltage of the transmitter internal battery : between 5 and 6VDC)



4- Safety aspects and optional functions

The UR remote controls implement numerous safety features, in particular :

Transmitter / receiver communication safety features:

- Permanent radio link : by its non-directional design and insensitivity to the presence of obstacles, the operator is protected from exposure to handling risks during precision manoeuvres and movements.
- Each transmitter+receiver pair has its own specific identity code.
- Hamming distance (minimum number of bits that differ between 2 messages that are different) of 4.

Transmitter safety feature:

- An active priority general shutdown command is generated when the «stop palmswitch button» is pressed.
- An electronic key limits access to the system to authorised persons only.
- An indicator light indicates an alarm in the event of an insufficiently charged battery.
- A «dead man» function shuts down the transmitter after a pre-programmed time period (1 to 98 mn or 1 to 99s) when no controls have been generated. This function can be disabled at any time to meet specific needs.
- Buttons protected mechanically against unintentional actions.

Receiver safety features:

- A passive shutdown device shuts down the system if the radio link is jammed.
- Category 3 safety per EN 954-1 is ensured by redundant control of the emergency stop circuit and use of guided contact safety relays.
- Contradictory commands can be interlocked electrically.

Functional safety feature:

- Start-up sequences are implemented to ensure safe operation by a trained, experienced operator.
- 55 ms response time compatible with the movement speeds of equipment controlled.

Accessory:

- An industrial type support charger (ref.: **URCi-B**) equipped with power supply adapter **UCC***, allowing the reload of the transmitter internal battery and the transmitter storage when it is not used.

Optional:

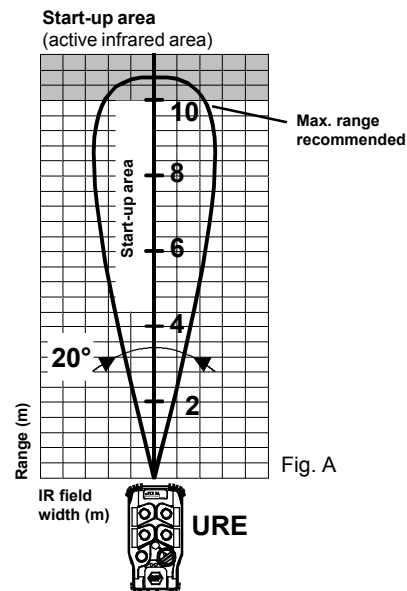
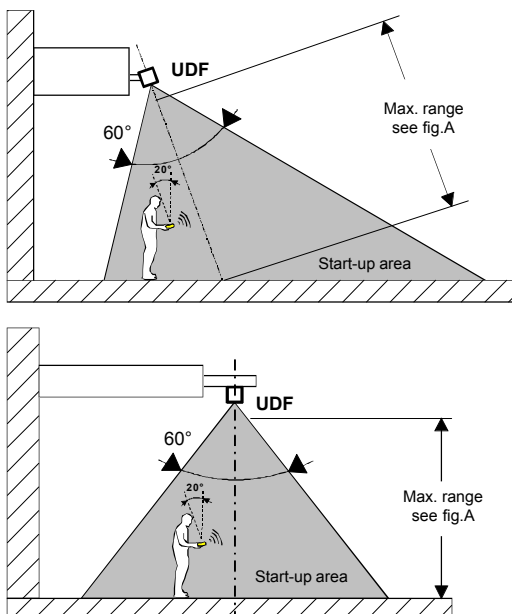
- Safety feature requiring IR validation to start up a remote controlled equipment can be used (see §4.1).

4.1 Option «Start up by IR validation»

- To start the unit, the operator is required to point the transmitter toward the **UDF** IR module installed on the equipment to be controlled (see positioning below). This ensures an error-free match-up between the transmitter and the equipment to be controlled.
- The IR start-up field of action has a range of 0 to 10m (see Fig. A).
- The link can be extended up to 2x10m, i.e. 30m in all (**UDF-URR** original link = 10m) by means of the **UDWR10** accessory comprising a shielded cable and its connector.

IMPORTANT : the wiring of the UDF IR module must be separate from the power cables and all other sources which may generate interference (power regulator, for example).

IR module UDF position :



5- Compatibility

Possible functioning of a **URE** transmitter with a **UDR** receiver from our **UD** series (see data sheet E330) or with an **XDR**(*) receiver from our **XD** series (see data sheet E810).

Possible functioning of a **UDE** transmitter from our **UD** series (see data sheet E330) or an **XDE**(*) transmitter from our **XD** series (see data sheet E810) with a **URR** receiver.



(*)= This case of use implies that the **UR** series transmitter or receiver should be kept out of the explosive atmosphere. Only the **XD** series (ATEX approved) transmitter or receiver can be used in an explosive atmosphere.

6- Technical characteristics

6.1 Receiver **URR**

Mechanical and environment withstand characteristics

Housing	ABS, grey - IP65
Weight	1.1 kg (approx.)
Dimensions	200x120x75 mm (without antenna and cable glands)
Operating temperature range	-20°C to +50°C
Storage temperature range	-30°C to +70°C
Cable lead-outs	
Power supply or IR module	1 M16 cover (cable diameter Ø 5 to 7 mm) (1)
Control outputs	1 M25 plastic cable gland (cable diameter Ø 14 to 20 mm)
Connection	Spring-type terminal strips for 0.08 ² to 2.5 ² section wires

Radio characteristics (complying with ETS 300 220)

Frequency	64 programmable frequencies in 433-434MHz (see list on page 6)
Antenna	¼ wave fixed antenna (can be unplugged as an accessory with kit ref : OWR01)
Sensitivity	< -100dBm

Electrical characteristics

Power supply and consumption (with 2 safety relays, the "Horn" relay and 6 function relays pulled in)	DC version 12VDC, -5% to +30%, 550 mA 24VDC, -20% to +20%, 430 mA AC version n°1 24VAC, -15% to +10%, 1 A 48VAC, -15% to +10%, 475 mA AC version n°2 115VAC, -15% to +10%, 200 mA 230VAC, -15% to +10%, 90 mA
Control	1 "Horn" relay + 6 function relays
Safety	2 relays with linked and guided contacts
Outputs	Independent 1 NO contact relay Category DC13 0,5A / 24VDC AC15 2A / 230VAC Max. breaking capacity 2000VA Max. current 8A (control relay), 6A (safety relay) Min. current 10 mA (12 Vmin.) Max. voltage 250VAC Service life with 230VAC, 70VA, cosphi=0,75 : Control relay : 3x10 ⁶ cycles Safety relay : 4,5x10 ⁶ cycles
Response time	On start-up : 0,5 s max. On control : 0,07 s max.
Active shutdown time	0,16 s max.
Passive shutdown time	1,15 s max.
Indicator lights	1 green indicator light : power supply 1 red + 1 green diagnostic indicator lights 1 red status indicator light per relay
Power supply protection	Against polarity inversions for DC versions Against overcurrent by fuse

(1)= The cover can be replaced by a plastic cable gland (standard PE) type M16 mounted in its place. The **UDF** infrared module is systematically delivered with one plastic M16 cable gland.

6.2 Transmitter URE




Mechanical and environment withstand characteristics

Housing	ABS, yellow - IP65 - Mechanical button protection
Weight (with battery)	240 g
Dimensions	46 x 78 x 143 mm
Operating temperature range	-20°C to +50°C
Storage temperature range	-20°C to +50°C
Fast charging temperature	0°C to +40°C
Fast charging complete time	2 hours 30 minutes

Electrical and radio characteristics

Power supply	Lithium battery
Endurance (buttons typical average use at +20°C)	50 hours / 50 % Transmit time
Frequency	64 programmable frequencies in 433-434MHz (see list below)
Transmit power	<10 mW (license not required) built-in antenna
Modulation	FM
Average range (1)	230m in typical industrial environment 600m in unobstructed area

Functional characteristics

Functions	<p>4 function buttons max. 5 different kinds of function buttons :</p> <ul style="list-style-type: none"> - one-step pushbutton (single speed) "BPSV" ⁽¹⁾ - two-step pushbutton (double speed) "BPDV" ^(1,2) - rotary switch with 2 fixed positions "COM2"  - rotary switch with 3 fixed positions "COM3"  - rotary switch with 3 positions with auto. return "COM3R"  <p>1 pushbutton "ON / Horn" 1 active priority emergency stop palmswitch 1 electronic key</p>
"Dead man" (Automatic shutdown of transmitter)	Time is user-programmable
Indicator lights	1 orange "battery level" and "diagnostic" indicator light 1 green "on", "battery charge" and "diagnostic" indicator light

(1)= Range will vary according to environment conditions of transmitter and reception antenna (metal frameworks, walls ...).

7- Table of programmable radio frequencies

433-434 MHz bands with adjacent intervals of 0,025MHz

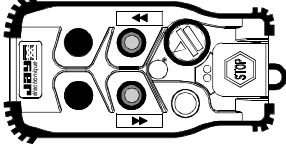
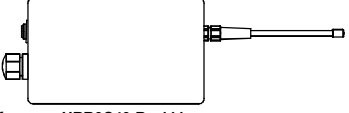
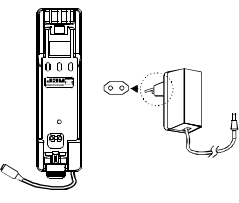
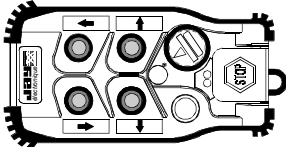
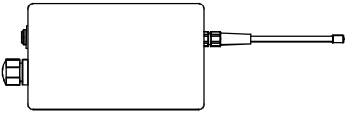
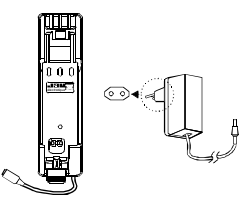
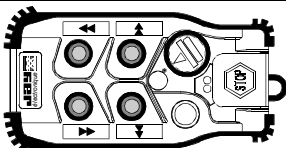
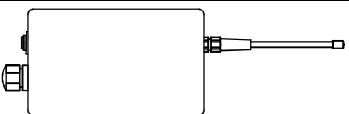
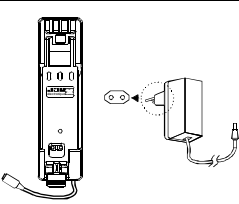
Channel N°	Frequency MHz	Channel N°	Frequency MHz	Channel N°	Frequency MHz	Channel N°	Frequency MHz
01	433,100	17	433,500	33	433,900	49	434,300
02	433,125	18	433,525	34	433,925	50	434,325
03	433,150	19	433,550	35	433,950	51	434,350
04	433,175	20	433,575	36	433,975	52	434,375
05	433,200	21	433,600	37	434,000	53	434,400
06	433,225	22	433,625	38	434,025	54	434,425
07	433,250	23	433,650	39	434,050	55	434,450
08	433,275	24	433,675	40	434,075	56	434,475
09	433,300	25	433,700	41	434,100	57	434,500
10	433,325	26	433,725	42	434,125	58	434,525
11	433,350	27	433,750	43	434,150	59	434,550
12	433,375	28	433,775	44	434,175	60	434,575
13	433,400	29	433,800	45	434,200	61	434,600
14	433,425	30	433,825	46	434,225	62	434,625
15	433,450	31	433,850	47	434,250	63	434,650
16	433,475	32	433,875	48	434,275	64	434,675

(2)= List of frequencies available for Denmark

(3)= List of frequencies available for Singapore

8- Selection guide, references for ordering

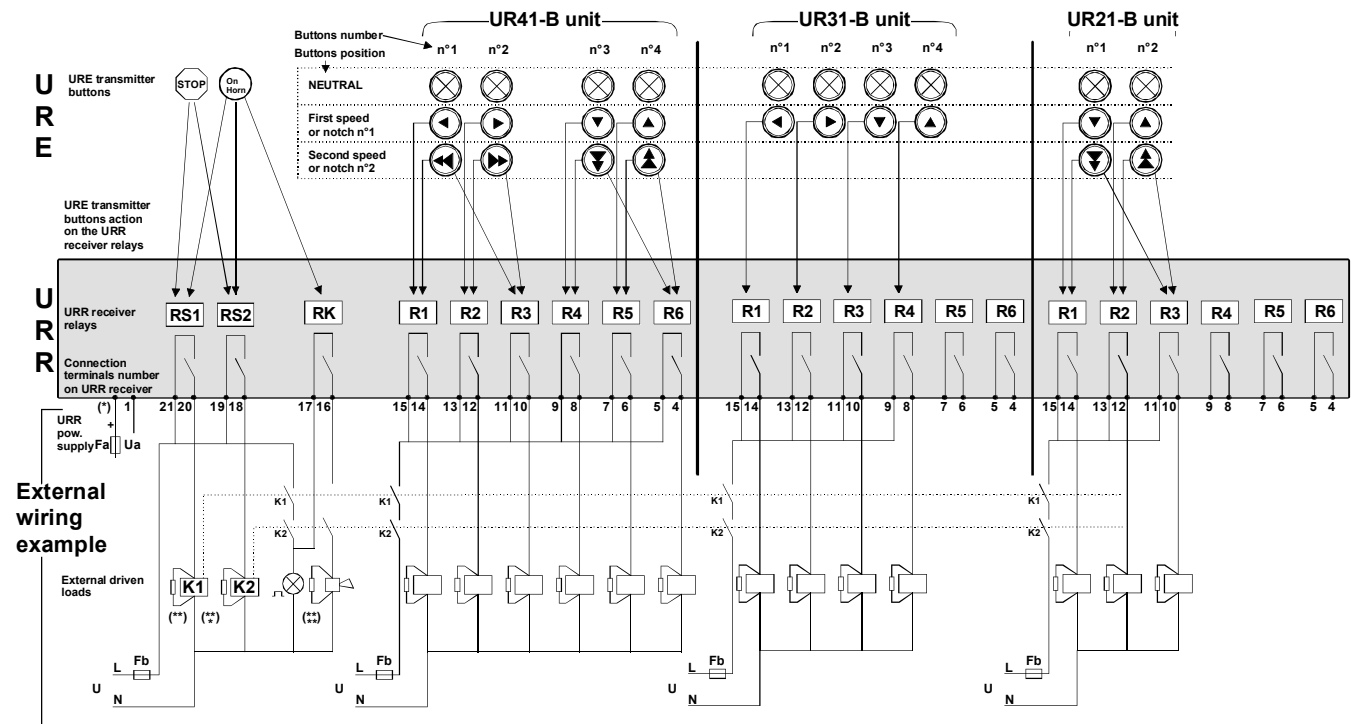
8.1 Standard units (transmitter + receiver + charger with power supply adapter)

Application examples	Transmitter	Receiver	Charger and power supply adapter	Standard unit reference
Winches	 <p>reference : URE22C0-B - 2 two-step pushbuttons (double speed) BPDV type + 1 "On/Horn" button + 1 stop palmswitch button - 433-434MHz bands, channel n°01</p>	 <p>reference : URR0C40-B - 111 - 6 function relays + 2 safety relays + 1 "On/Horn" relays - power supply 12-24VDC - button n°1-n°2 interlocked with output relays set to OFF state - 433-434MHz bands, channel n°01</p>	 <p>references : URCi-B + UCCU Support charger and power supply adapter 230VAC / 5VDC euro.plug</p>	UR21-B
Transpallets	 <p>reference : URE2110-B - 4 one-step pushbuttons (single speed) BPSV type + 1 "On/Horn" button + 1 stop palmswitch button - 433-434MHz bands, channel n°01</p>	 <p>reference : URR0C40-B - 111 - 6 function relays + 2 safety relays + 1 "On/Horn" relays - power supply 12-24VDC - button n°1-n°2 and n°3-n°4 interlocked with output relays set to OFF state - 433-434MHz bands, channel n°01</p>	 <p>references : URCi-B + UCCU Support charger and power supply adapter 230VAC / 5VDC euro.plug</p>	UR31-B
Hoists Monorails Jib cranes	 <p>reference : URE2220-B - 4 two-step pushbuttons double speed) BPDV type + 1 "On/Horn" button + 1 stop palmswitch button - 433-434MHz bands, channel n°01</p>	 <p>reference : URR0CA0-B - 111 - 6 function relays + 2 safety relays + 1 "On/Horn" relays - power supply 24-48VAC - button n°1-n°2 and n°3-n°4 interlocked with output relays set to OFF state - 433-434MHz bands, channel n°01</p>	 <p>references : URCi-B + UCCU Support charger and power supply adapter 230VAC / 5VDC euro.plug</p>	UR41-B

A standard unit comprises :

- 1 transmitter (without option) + 2 label kits (ref. : UWE202 and UWE207)
- 1 support charger (for battery charging) + 1 power supply adapter
- 1 receiver (with 1 fixed antenna, without option) + 1 electronic key + 1 accessory for common lines + 1 installation and user technical manual

8.1.1 Wiring diagram example for standard units



- (*)= The power supply connection depends on the type of receiver and the power supply required (terminals 2 | -1 | for power supplies 24VDC, 24VAC, 115VAC or 3 | -1 | for power supplies 12VDC, 48VAC, 230VAC)
 (**)= Relay life is increased by the use of surge limiters (ex: RC network for AC, Zener + diodes for DC etc...)
 (**)= K1 and K2 contactors must have guided contacts
 (***)= Elements wich indicate start of remote controlled machines (ex: horn, rotating / flashing light etc...)

Safety relays RS1 and RS2 are switched "on" by the pushbutton "ON / Horn", and hold in position until the stop palmswitch is pressed (active shutdown) or until the loss of the radio transmission (passive shutdown).

8.2 Separate elements (transmitter / receiver / accessories)

Transmitter URE

Transmitters are delivered without electronic key, this one being delivered with the receiver (or can be ordered separately with the reference **URWE21-B**).

◆ **Main reference :**

Version :
2= without option
3= with option «Start-up by IR validation»

Button configuration
« * * », except 3 standard products

For non standard product
Configuration buttons to be specified

URE | **0-B**

Button configuration table :

1st button row	2nd button row	1	2	3	4	5	6	7	8	9	10
2 x BPSV	2 x BPSV	2	3	1	*	*	1	no	1	1	
	BPSV-COM2	2	3	*	*	*	1	3			
	BPSV-COM3	2	3	*	*	*	1	4			
	COM2-COM2	2	3	*	*	*	1	5			
	COM2-COM3	2	3	*	*	*	1	6			
	2 x COM3	2	3	*	*	*	1	7			
	BPSV-COM3R	2	3	*	*	*	1	8			
	COM2-COM3R	2	3	*	*	*	1	9			
	COM3-COM3R	2	3	*	*	*	1	A			
	2 x COM3R	2	3	*	*	*	1	B			
2 x BPDV	2 x Covers	2	3	2	*	C	2	no	2	C	
	2 x BPDV	2	3	2	*	*	2	no	2		
	BPSV-COM2	2	3	*	*	*	2	3			
	BPSV-COM3	2	3	*	*	*	2	4			
	2 x COM2	2	3	*	*	*	2	5			
	COM2-COM3	2	3	*	*	*	2	6			
	BPSV-COM3R	2	3	*	*	*	2	8			
	COM2-COM3R	2	3	*	*	*	2	9			

BPSV = one-step pushbutton (single speed)
BPDV = two-step pushbutton (double speed)
COM2 = Rotary switch with 2 fixed positions
COM3 = Rotary switch with 3 fixed positions
COM3R = Rotary switch with 3 positions with auto. return

Example : URE20-B / button configuration : 15**
URE radio transmitter (433-434MHz bands), without option, button configuration : 1st row BPSV-BPSV, 2nd row COM2-COM2, delivered with label kits ref.: UWE202 and UWE207.

◆ Accessories for URE transmitter :

Reference	Description
URCi-B	Charger support (power supply adapter to be ordered separately)
UCC1	Power supply adapter 12-24VDC (Vehicle plug) / 6VDC
UCCU	Power supply adapter 230VAC (Euro. plug) / 5VDC
UCCW	Power supply adapter 230VAC (english. plug) / 5VDC
UCC4	Power supply adapter on DIN rail 24VDC / 5VDC
OWE20	Neck strap
UWE103	Holster
UWE104	3 points carrying strap
UWE202	Label kit of 6 colored labels "movements" for double speed pushbuttons (2 steps) (2)
UWE205	Label kit of 48 white blank labels for customized marking
UWE207	Label kit of 90 white/black labels "movements, special functions and customization" for switches and pushbuttons (2)

- (2) = 1 accessory supplied with product.
(3) = BNC antenna and BNC extension to be ordered separately.
(4) = Require BNC tuner connector kit ref.: **OWR01**
(5) = Not suitable for direct connection to antenna ref.: **VUB086**

The products presented in this document are subject to change. Product descriptions and characteristics are not contractually binding. Please go to our internet site www.jay-electronique.fr to download the most recent updates to our documentation.



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Receiver URR

Receivers are delivered with an electronic key programmed according to the transmitter configuration.

◆ **Main reference :**

Power supply :
4 = 12 - 24 VDC
A = 24 - 48 VAC
B = 115 - 230 VAC

URR | **C** | **0-B**

Version :
0=without option
1=with option «Start-up by IR validation» (1)

(1)= This only includes the required programming for the receiver. The UDF IR module must be ordered separately.

◆ **3 additional reference digits :**

Programming of «transmitter button - receiver relays» correspondence :
Number of relays controlled by transmitter BPDV (two-step pushbuttons) button pairs
1 = 3 controlled relays or no BPDV on transmitter
2 = 4 controlled relays

Programming of «transmitter button - receiver relays» correspondence :
Type of control for transmitter COM3 and COM3R (rotary switches with 3 positions)
1 = Type : 1, 1+2, 2 or no COM3/COM3R on transmitter
2 = Type : 1, OFF, 2

Programming of transmitter pushbuttons (BPSV and BPDV type) interlocking, between button n°1/n°2 and button n°3/n°4 :
0 = no interlocking
1 = interlocking with output relays set to OFF state
2 = interlocking with priority on left button (n°1, n°3)
3 = interlocking with priority on right button (n°2, n°4)

Example : URR0C40-B - 012
URR radio receiver (433-434MHz bands), without option, 6+3 relays (6 function relays + 1 «Horn» relay + 2 safety relays), power supply : 12-24VDC, no interlocking, if present on transmitter "BPDV" button types control 3 relays, if present on transmitter "COM3" and "COM3R" button types are of the 1-OFF-2 type, delivered with an electronic key containing the receiver identity code and the associated transmitter button configuration.

◆ Accessories for URR receiver :

Reference	Description
URWE21-B	Programmed electronic key (please, specify the key number) (2)
OWR01	BNC plug kit for plug-in/deported antenna (3)
VUB084	1/4 wave straight antenna - BNC (4)
VUB086	1/2 wave straight antenna - BNC (4)
VUB060	90° BNC elbow for VUB084 antenna or BNC antenna extension (4) (5)
VUB105	2 m extension for antenna + bracket (non insulated) - BNC (4)
VUB125	5 m extension for antenna + bracket (non insulated) - BNC (4)
VUB131	10 m extension for antenna + bracket (non insulated) - BNC (4)
UDWR12	Common wiring accessory (2)
UWE001	2 ways directional self-adhesive arrows in color for travelling crane
UWE002	4 ways directional self-adhesive arrows in color for travelling crane
UDF1	1 UDF IR module (10 m cable and one M16 cable gland included) for option "start-up with IR validation"
UDWR10	10 m cable extension + connector for UDF IR module
UDWR38	Fastening Kit for receivers by magnetic contacts

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